

Efficiency analysis of risk management practices and their impact on income in small café businesses: The case of Battambang, Cambodia

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Abstract

Cambodia's café market is rapidly growing due to increasing consumer demand across all age groups and a rising population. Influenced by Western culture, the younger generation is adopting new lifestyles and tastes, enhancing their quality of life. Improved economic conditions have also given people more disposable income for consuming coffee. However, small cafés, particularly in Battambang, face various management risks, especially in light of COVID-19 outbreak. This study aims to identify the primary risk factors impacting these businesses income and propose practical solutions. The study involved a sample of 80 cafés and in-depth interviews with 15 owners using statistical tools covering stepwise regression and Tobit models. Five risk areas were examined in the interviews: financial, market, operational, reputational, and economic. The results indicate a wide range of revenue, from \$10 to \$200. Even though some cafés have higher sales, their high costs and ineffective

management frequently result in low profits. Additionally, according to the regression analysis, operational risks have the biggest impact on the income of small café businesses, followed by financial and economic risks. These results can provide benefits and wise decisions for all café owners in Battambang to enhance profitability and sustainability.

Keywords: Efficiency Analysis, Risk Management, Small Café Businesses, Impact on Income, Tobit, Stepwise, Battambang, Cambodia.

JEL Classification Codes: D22, G32, L26, M12, M13, M21

1. Introduction

Cambodia's coffee market is still rising, driven by several factors, such as the rise of coffee shops and cafés, high disposable income, and the growing influence of Western culture. This phenomenon is happening in Battambang Province, Cambodia, where small café businesses are very competitive and productive (Sokly & Mardy, 2023; Darith et al., 2024a). Cambodia's economy has seen remarkable growth, with its GDP doubling between 1994 and 2004 and tripling by 2009. Over the last twenty years, the country has maintained impressive and sustainable economic progress, averaging an annual growth rate of 7% (ADB, 2024; RGC, 2023; Darith et al., 2024b). In 2012, the economy of Cambodia increased by 7.3%, which raised the per capita GDP from \$760 in 2008 to \$1,300 by 2016. Cambodia has evolved from being a low-income country to a lower-middle-income country because of this growth. The economy of Cambodia is growing faster than those of other ASEAN countries (Ky & Lim, 2020). The Royal Government of Cambodia (RGC) has set ambitious targets for 2030 and 2050 to elevate the country to a high-income and developed status. They focus on identifying effective policies to navigate political and socioeconomic challenges and drive the country forward (MLVT, 2017; RGC, 2015). During the COVID-19 pandemic, the service sector in Cambodia, which heavily relies on tourism, was severely impacted and constitutes about 42.2% of the GDP. The sector faced an unanticipated drop in tourist arrivals, with a projected growth rate of only 2.88%. The Royal Government

recommended offering financial support, promoting domestic tourism, and improving service quality to deal with the impact. When the recovery progresses, there are opportunities for rejuvenation through diversification, infrastructure upgrades, and workforce development. Long-term sustainability depends on skill enhancement and a stable economic environment (Ly, 2023; Ky & Lim, 2020).

Battambang lies in the northwest of Cambodia. This city has a lot of interesting culture and a growing coffee scene that attracts people there. It is the third largest city in the country, with a population of 987,400 (Chhay, 2019; Darith et al., 2024c; Darith & Eav, 2024). Interestingly, Battambang stands out as a model of sustainable urban development in Cambodia. Its dedication to environmental sustainability and forward-thinking urban planning has earned it recognition as a clean and green city by both the Cambodian government and ASEAN (Lord et al., 2024). The café industry in Battambang City has experienced a significant increase in recent years, which is a sign of the country's small and medium-sized business (SMEs) sector's continued growth (Tieng et al., 2024), according to a café owner in Battambang revealed that the city expects to have around 150 cafés in operation throughout 2024. This growth is primarily fueled by an emerging middle class, increased urbanization, and a steady stream of tourists attracted to Battambang's rich cultural heritage and diverse food scene. These cafés serve as popular social hubs and play a vital role in generating jobs, especially for young people and women, thereby significantly

bolstering the local labour market. On a global scale, small café businesses have a considerable economic impact, benefiting local economies by supporting community farmers, creating jobs, and drawing tourists. Additionally, the coffee sector provides millions of jobs worldwide (Sachs et al., 2019; Darith et al., 2024c).

Although there are numerous positive factors, the café industry in Cambodia is experiencing various difficulties, for instance, unstable economic conditions, strong competition, supply chain interruptions, and barriers to regulation (Parizat, 2015; Sokly & Mardy, 2023; Statista, 2024). According to the Nestlé ESAR (2024) report, the global coffee market faces mounting pressure to implement sustainable practices and adjust prices upward. Similarly, small café owners in Battambang also encounter significant financial challenges, including difficulty obtaining sufficient funding, which hampers their ability to maintain or grow their businesses (Union, 2010; Parizat, 2015). A recent survey found that 60.2% of respondents in the restaurant business sector face financial instability, reflecting higher debt levels caused by inadequate cash flow and restricted access to funding. This aligns with the World Bank's analysis of Cambodia's private sector debt, emphasizing the need for improved bank oversight and stress testing to maintain financial stability. The rising debt among restaurant owners indicates their financial challenges in a volatile economic environment (CIR, 2024; CCT, 2020). Cafés frequently face obstacles in developing effective marketing strategies to attract customers, exacerbating their financial challenges. In addition, the café industry is exposed to

market risks, such as shifting consumer preferences, increasing competition, and fluctuating demand influenced by seasonal patterns (Peluso, 2023; Poltronieri & Rossi, 2016). In today's competitive landscape, café owners must continuously adapt and innovate to keep up with changing consumer preferences. This can be tricky work for small business owners (Bianco, 2020; Ramgade & Patil, 2021). Operational risks are also critical in shaping the profitability and stability of small and medium-sized enterprises (SMEs) like café businesses. Efficient supply chain management is also essential, as disruptions can lead to delays, higher expenses, and diminished customer confidence. Businesses can get over such challenges, limit their need for just one supplier, and keep backup inventories (Hudáková et al., 2023; Adam & Alarifi, 2021; Falkner & Hiebl, 2015).

Reputation in the café industry depends on key factors. Problems like food contamination or incorrect handling of allergens can harm a café's reputation, making strict food safety rules very important (Gatzert, 2015). Negative social media and review Crises can quickly get out of control and seriously harm a café's reputation. This points out how crucial it is to continue being proactive in resolving customer complaints, reacting quickly to feedback and having a solid crisis management plan in place in order to successfully limit any potential impact (Gaultier-Gaillard et al., 2009). Issues like labour exploitation, environmental damage, or ignoring social responsibilities can harm a business's reputation. This shows why ethical practices and corporate social responsibility (CSR) are crucial (Trcak, 2020). Taking part in

CSR activities helps businesses manage reputational risks, build a positive reputation, and stand out from competitors (Sarbutts, 2003).

The current study aims to fill a significant information gap about the risk management practices of small café businesses in Battambang. It provides valuable advice to help café owners improve their businesses by looking at primary financial, operational, reputational, market, and economic risks. The study results suggest effective strategies that can help businesses do far better in the long term and be more resilient in a very competitive environment.

2. Methods

2.1. Sample Size and Data Collection

The sample size for this study involves 80 cafés. Researchers used purposive and convenience sampling methods that fall under the umbrella of non-random sampling. 15 café owners were interviewed in depth to find out more regarding the 5 primary risk areas in how they handle risk management. The number of samples is adequate for the variety of information regarding management practices; the cafés were picked according to their number of employees and geographical location, as well as insights into financial, market, operational, reputational, and economic risks. Particularly, a closed-ended survey was filled out to collect quantitative data. The survey covered many parts of how they handle risk. Researchers used open-ended surveys and semi-structured interviews with café owners or managers as well. The interviews shared detailed data on how the owners thought about things and how they handled risk. The

- ***Lancome***: Log-transformed income of the café businesses (dependent variable).
- ***lnFi_1, lnFi_2***: Represent logarithm of financial risk factors.
- ***lnOp_1, lnOp_2***: Represent logarithm of operational risk factors.
- ***lnMk_1, lnMk_2***: Represent logarithm of marketing risk factors.
- ***lnEco_1, lnEco_2***: Represent logarithm of economic risk factors.
- ***lnRep_1, lnRep_2***: Represent logarithm of reputational risk factors.
- **$\beta_0, \beta_1, \beta_2, \dots, \beta_{10}$** : Coefficients that estimate the impact of each variable on income.
- ***UI***: Error term, accounting for unobserved factors that affect income.

3. Results and Discussion

3.1. Descriptive Statistics

The overview of the key risks faced by café businesses in Battambang is categorized into five significant risks, as presented in **Table 1**. The risks involve financial, operational, market, economic, and reputational risks. Financial risks emerge as a significant concern, with high operating costs (33.33%) and cash flow management (26.67%) identified as the primary challenges. Additionally, 26.67% of respondents struggle with low sales and revenues. To mitigate these risks, the majority (53.33%) focus on

increasing sales through advertising, while others employ financial planning (26.67%) or cost-reduction strategies (13.33%). Operational risks reveal challenges such as broken equipment (40%) and staff shortages (33.33%), with a smaller percentage (13.33%) citing inventory management issues. Café owners addressed these operational challenges through regular equipment maintenance (40%) and staff training (26.67%), highlighting the necessity of maintaining efficient operations. In terms of market risks, competition is the predominant concern for 93.33% of café businesses, while only 6.67% report a lack of customers. To navigate market challenges, many café owners focus on distinguishing their offerings from competitors (33.33%) and providing promotions and discounts (46.67%). Economic risks are primarily influenced by inflation and rising costs (33.33%) and domestic economic crises (40%), prompting café owners to expand their services or products (33.33%), reduce costs (26.67%), or adjust pricing strategies (20%). Finally, reputational risks are centred on product quality (53.33%) and customer service, with 66.67% of businesses prioritizing high-quality products as their primary protection method. The descriptive statistics data underscore the diverse challenges café owners face and the various risk management strategies. It presents the complexities involved in running a small café business in Battambang Province, Cambodia.

Table 1. Descriptive Statistics of Independent Variables in Café Small Businesses

Risks	Variable	Definition	Measurements	Scale	Freq.	%
Financial Risk	Fi_1	Primary Financial Challenges	Cash flow management		4	26.67
			High operating costs		5	33.33
			Low sales and revenues		4	26.67
			All		2	13.33
	Fi_2	Financial Risk Management Methods	Budget and financial planning		4	26.67
			Increase sales through advertising		8	53.33
			Reduce costs		2	13.33
			Find a loan or credit		1	6.67
			Lack of staff		5	33.33
			Broken equipment		6	40.00
Operation Risk	Op_1	Common Operational Challenges	Inventory management		2	13.33
			All		2	13.33
			Regular equipment maintenance		6	40.00
			Staff training		4	26.67
	Op_2	Operational Risk Mitigation	Better inventory management		2	13.33
			All		3	20.00
Market Risk	Mk_1	Key Marketing Challenges	Competition		14	93.33
			Lack of customers		1	6.67
	Mk_2	Marketing Risk Mitigation	Distinguish my café from competitors		5	33.33
			Offer promotions and discounts		7	46.67
			Improve customer service		1	6.67
			All		2	13.33
Economic Risk	Eco_1	Economic Factors Impacting Performance	Inflation and rising costs		5	33.33
			Domestic economic crisis		6	40.00
			Changes in consumer spending		2	13.33
			All		2	13.33
	Eco_2	Economic Risk	Reduce costs		4	26.67
			Product / Service Expansion		5	33.33

Reputation Risk	Planning	Find additional sources of income	2	13.33
		Adjust the pricing strategy	3	20.00
		All	1	6.67
	Factors Affecting Reputation	Customer service	1	6.67
		Product Quality	8	53.33
		Internet and social media	1	6.67
		Online popularity and social media presence	1	6.67
		All	4	26.67
	Reputation Protection Methods	Guarantee of high-quality products	10	66.67
		Keeping the environment clean and attractive	1	6.67
		Excellent customer service	1	6.67
		All	3	20.00

The output variables for small café businesses are presented in **Table 2**, focusing on three key variables: years in operation, risk management strategies implemented, and most significant risks faced. Initially, with years of operation, cafés operating for 2–4 years achieve the highest income compared to the rest, with \$88, even beating older businesses, indicating that longevity does not always guarantee better financial performance. Secondly, small café businesses that implemented risk management strategies performed significantly better, selling 103 cups on average with \$108 in revenue and \$49 in income, compared to those without, which sold only 27 cups, earning \$20 in revenue and \$8 in income. Additionally, small café businesses that faced the most significant risks, like operational risks, generated the highest revenue among the five main risks, with \$200 and an income of \$88. At the same time, those citing financial risks also performed well, with \$119 in revenue and

\$56 in income. Market risks sell the most (125 cups) but earn less, with \$90 in revenue and \$34 in income. Under reputation risks, small café businesses performed the worst, selling only 35 cups with a revenue of \$25 and an income of \$9.

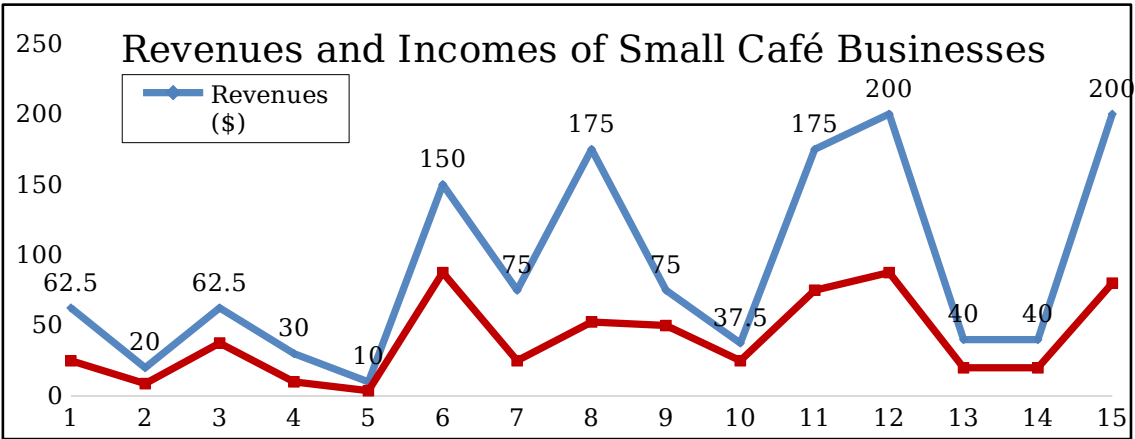
Table 2. Descriptive Statistics of the Output Variables for Small Café Businesses

Variable	Definition	Obs.	Group	Obs.	Amount (cups)	Revenue s (\$)	Incom e (\$)
<i>Opyear</i>	Years in Operation	15	≤ 1	5	44	46	25
			2-4	1	80	150	88
			5-7	4	65	85	39
			≥8	5	152	127	47
<i>RMSI</i>	Risk Managemen t Strategies Implemente d	15	Yes	12	103	108	49
			No	3	27	20	8
<i>BRF</i>	Biggest Risks Faced	15	Economic	4	60	82	46
			Reputatio n	2	35	25	9
			Financial	2	80	119	56
			Market	6	125	90	34
			Operation	1	100	200	88

In contrast, during economic risks, sales performed better, with 60 cups selling for \$82 in revenue and \$46 in income, indicating financial struggles. The output results emphasized the critical role of risk management and strategic positioning in small café business success in Battambang province.

3.2. Revenues and Incomes of Small Café Businesses

Discovering the revenues and incomes of small café businesses in Battambang is vital for purposes that benefit both the individual businesses and the local economy, as shown in **Figure 1**. The results indicate significant variations in the revenues and incomes across



small cafés, ranging from as low as 10 dollars to as high as 200 dollars.

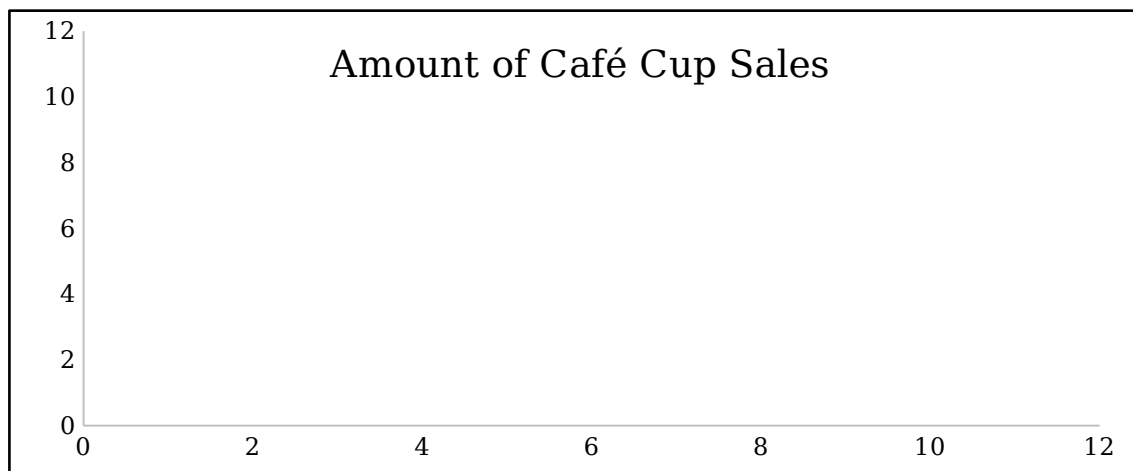
Figure 1. Revenues and Incomes of Small Café Businesses

Remarkably, some cafés experience sharp increases in revenue, while others show relatively low or inconsistent earnings. The highest revenue points, such as 150, 175, and 200 dollars, are that some businesses generate high revenues. In contrast, others struggle with lower earnings due to differences in market demand, economic conditions, reputation, financial difficulty, and operational efficiency. It is similar to a prior study by Poernomo et al. (2019) and Darith et al. (2024a). However, despite fluctuations in revenue, income

remains consistently lower, suggesting that some small cafés faced management risks that may be reducing profitability. As a result, certain cafés experience sharp declines in revenue, which could be attributed to ineffective business management. Additionally, some businesses report minimal or no income, implying financial challenges such as high expenses or low-profit margins. These results suggest that while some cafés thrive, others face difficulties maintaining profitability, emphasizing the importance of risk management and strategic planning for the success of sustainable small café businesses.

3.3. Amount of Café Cup Sales of Small Café Businesses

Figure 2 represents the number of café cups sold by small café businesses in Battambang. Sales have fluctuated, with multiple peaks and dips, as determined by the figure. Sales start at 50 cups, drop to 20 cups, and then fluctuate before reaching a low of 10 cups. After a sudden rise to a peak of 250 cups, there is a sudden drop back to 50 cups. Sales then stabilize between 50 and 100 cups before another sudden rise to 300 cups. The variances reflect that irregular



sales patterns are experienced by small café business operations, which are probably affected by the said variables.

Figure 2. Amount of Café Cup Sales of Small Café Businesses

3.4. The Regression Results of Small Café Businesses' Income

Table 4 presents the regression results of small café businesses' income, which is treated as the dependent variable. Tobit and stepwise are two distinct regression models tested in this empirical study. The listed variables represent independent factors that influence café income, such as financial risk (lnFi_1, lnFi_2), operation risk (lnOp_1, lnOp_2), market risk (lnMk_1, lnMk_2), economic risk (lnEco_1, lnEco_2), and reputation risk (lnRep_1, lnRep_2). Another benefit is that the descriptive statistics in **Table 1** also presented all variable definitions in detail. Some variables were found to have significant levels based on the Tobit and stepwise models. Notably, lnFi_2 found 5% significance in both models; it is revealed that financial risk management methods can significantly influence a café's income. Taking on this, each method could result in higher profit, but it also exposes the business to potential losses. On the other hand, facing higher risk might lead to reduced profits and lead to a financial crisis. Consequently, café owners must carefully assess and manage their risks through proper financial risk management methods to maintain stability. Respectively, the common operational challenges (lnOp_1) were found to be 5% significant for Tobit and 10% marginally significant for stepwise, with p-values of 0.050 and 0.110. This means that everyday inefficiencies could lead to operational challenges. Common challenges include service delays, inconsistent product quality, or

frequent equipment breakdowns. This also has a clear and measurable effect on the profitability of the café. Similarly, marketing risk mitigation (lnMk_2) was 5% significant, with p-values of 0.060. In terms of economic risk and reputation risk, the most remarkable variables were found at various significant levels, which also impact income. The other analysis revealed statistically significant effects for several factors. Economic risk planning (Eco_2) showed significance at the 5% level ($p = 0.030$). Factors affecting reputation (Rep_1) were significant at the 5% level in the Tobit model ($p = 0.014$) and at the 1% level in the stepwise model ($p = 0.007$). Notably, reputation protection methods (Rep_2) exhibited strong significance at the 1% level in both models ($p = 0.006$ and $p = 0.002$). The constant term (cons) was also significant at 1% ($p = 0.001$ Tobit, $p = 0.000$ stepwise). Crucially, the likelihood-ratio chi-square test (LR χ^2) indicates that the Tobit model (20.99) provides a better fit for the data compared to the stepwise model (15.53). Both models exhibit statistically significant p-values ($\text{Prob} > \chi^2$) below 0.05. It is demonstrated that their superiority over a model without independent variables. The pseudo-R-squared values further support this distinction, with the Tobit at 0.532 and the stepwise at 0.394. In this case, it is revealed that Tobit can better explain the variation in income. Additionally, the stepwise log-likelihood is slightly lower (-11.959) than that of Tobit (-9.229). It is suggested that it is a potential fit advantage for the analysis results.

Table 4. The Regression Results of Small Café Businesses' Income

Variable	Tobit				Stepwise			
	Coefficient	Std. Error	T-value	P-value	Coefficient	Std. Error	T-value	P-value
lnFi_1	-0.347	0.519	-0.67	0.533	-	-	-	-
lnFi_2	-1.232**	0.456	-2.70	0.043	-0.837**	0.434	-1.93	0.086
lnOp_1	1.025**	0.398	2.58	0.050	0.649*	0.367	1.77	0.110
lnOp_2	-0.404	0.303	-1.33	0.240	-	-	-	-
lnMk_1	-0.809	1.118	-0.72	0.502	-	-	-	-
lnMk_2	-0.482	0.443	-1.09	0.326	-0.870**	0.404	-2.15	0.060
lnEco_1	0.748	0.416	1.80	0.132	-	-	-	-
lnEco_2	-0.763**	0.255	-2.99	0.030	-0.616**	0.277	-2.23	0.053
lnRep_1	1.524**	0.409	3.72	0.014	1.632***	0.471	3.47	0.007
lnRep_2	-1.143***	0.253	-4.52	0.006	-1.188***	0.282	-4.22	0.002
cons	3.417***	0.436	7.84	0.001	3.359***	0.477	7.04	0.000
LR chi2(10)	20.99				15.53			
Prob > chi2	0.021				0.017			
Pseudo R2	0.532				0.394			

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Log-likelihood.	-9.229	-11.959
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Note: *10% Marginal Significance (P < 0.10); **5% Significance (P < 0.05); ***1% Highly Significant (P < 0.01)

4. Conclusions

The mission of this study appeared to be the analysis of risk management and identifying financial, operational, market, economic, and reputational risks in small café businesses in Battambang. Starting, revenues and incomes of small café businesses in Battambang revealed significant variability in the revenues and incomes, with revenues ranging from 10 to 200 dollars. While some cafés achieve high revenues, their incomes remain consistently lower. It is suggested that challenges such as high costs and management inefficiencies be addressed. On top of that, the amount of café cup sales by small café businesses depicts the sales volume of café cups; it displayed significant fluctuations in sales patterns. Sales start at 50 cups, decrease to 20 cups, and then vary before peaking at around 250 cups, followed by a drop back to 50 cups. This inconsistent sales behaviour likely reflects various influencing factors such as trends, consumer preferences, and market conditions. The result suggests that small cafés experience irregular sales, emphasizing the importance of adaptive strategies in managing demand and operations effectively. In essence, the regression results for small café businesses' income use both Tobit and stepwise regression as statistical models to analyze the impact of various risk factors. The results indicated that operational risks were found to be notably high, significant at 1 % impact on the café income of both models, particularly with the variables of operational risks (InRep_1 and InRep_2). Likewise, the constant term (cons) further underscores a stable baseline income independent of the variables analyzed. While

other variables like financial risk (InFi_2) and economic risk (InEco_2) also show significance at the 5% level, their impacts are less pronounced. These findings emphasize the critical role of reputation and financial and economic risk management in café profitability, where strategic investments must be considered. The study offers actionable advice and policy suggestions to help café owners understand the importance of effective risk management and its impact on their income. The strategies to minimize risks are provided to ensure the long-term sustainability of small café businesses.

5. Recommendations

Based on the above results regarding the analysis of risk management practices and their impact on income in small café businesses in Battambang, Cambodia, researchers aim to propose several key recommendations to improve risk management practices and enhance income levels for all café owners. Firstly, enhancing reputation management is a critical area that requires attention. Cafés should prioritize enhancing customer experiences by improving service quality, cleanliness, and product offerings to build a positive reputation locally and applying social media marketing (SMM) strategies effectively by hiring the best-known online reviewer or influencer to engage with customers closer. Additionally, participating in community events helps establish a café's presence and fosters a trusted relationship with the local community. Secondly, financial management is another crucial aspect for café owners, as financial risk significantly impacts income. Providing

training on financial literacy focusing on budgeting, cash flow management, and investment strategies will advance café owners and staff members to make informed decisions and be well-informed. Additionally, policymakers play a pivotal role in facilitating access to microfinancing choices tailored to small industries like cafés, ensuring flexible terms and lower interest rates. This would help reduce sudden financial shocks. Thirdly, economic risk management is a significant factor for small café businesses to thrive and stay resilient in this competitive landscape. Café owners should consider keeping a close watch on market trends, particularly the prices of coffee beans and other essential ingredients, which may be affected by disruptions in global supply chains or environmental factors. Searching for different supplier options can help reduce reliance on a single source and lower potential risks in these uncertain economic conditions. Added to that, improving operations by adopting technologies like new inventory management tools and advanced point-of-sale systems can effectively streamline daily operations. Crafting marketing efforts that cater to local consumer tastes can draw in new patrons, while loyalty programs and other customer retention strategies help secure consistent revenue streams. Last, but not least, ask for support from local authorities and other expert entrepreneurs with experience in the success of small cafés. Programs and training sessions that provide café owners with valuable knowledge for better risk management.

Author Contributions:

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